PROJECT NUMBER: 2520
PROJECT TITLE: Flavor Research
PROJECT LEADER: E. W. Southwick
PERIOD COVERED: October, 1987

I. MENTHOL RELEASE CHEMISTRY

A. Objective: To develop menthol-release flavorants.

B. Results: Pyrolysis and LTF smoking experiments have shown that, among the components of the present menthyl glucose carbonate mixture, two compounds are significantly more efficient for menthol release. These are 1,6-di-O-menthyloxycarbonyl-β-D-glucose and 1-O-menthyloxycarbonyl-β-D-glucose. A series of experiments has been completed which demonstrate that these two components can be increased to comprise 60% of the mixture instead of the present 27%. A modification of the present synthesis could provide a mixture which delivers menthol more efficiently.

II. PROJECT EXTRA

A. Objective: To develop proprietary flavor additives for enhanced flavor perception in low delivery cigarettes.

B. Results: The increased commercial availability of alpha- and beta-cyclodextrins now warrants a re-investigation of their use in flavor release systems. Anethole has been successfully complexed with the cyclodextrins to give an odorless solid; when treated with water or glycerine, the characteristic odor of anethole is clearly perceived. Attempts to form similar solid complexes with flavor mixtures or tobacco volatiles were not successful; in these cases, spray drying or freeze drying the aqueous solutions may be necessary.

The investigation of structural modifications of hexahydro-2,3H-benzofuranones has been extended to the preparation of a 6-n-butyl derivative. The formation of the lithium amide base during the synthesis has been examined by ^{13}CMR and shown to be quantitative.

Additional quantities of several acyl- and diacylpyrazines have been synthesized and made available to Flavor Development for subjective evaluations:

CR-2043
CR-2044
CR-1945
CR-1946

Sodium borohydride reduction of the acylated pyrazines gives pyrazyl alcohols which may be considered as analogs of deoxyfructosazines. Preliminary results indicate that these alcohols partially dehydrate at 250° to give vinyl pyrazines.

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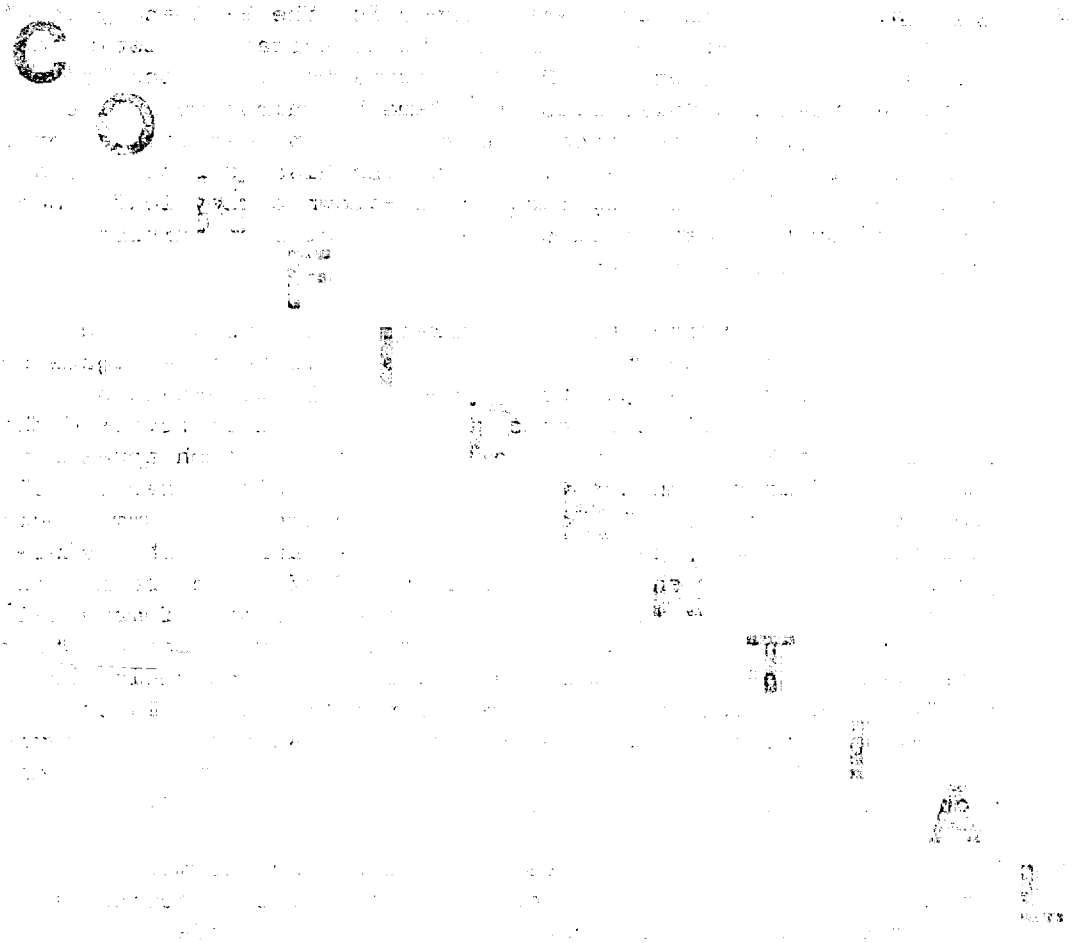
These compounds will be more thoroughly investigated as flavorants.



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